WSDOT Pedestrian and Bicycle Safety Grants
Invitational Call for Projects

Application Deadline: May 10, 2010

In 2005, the Pedestrian & Bicycle Safety Program was established to address the nearly 400 statewide fatal and injury collisions involving pedestrians and bicyclists that occur each year. Between 2006 and 2008 over 9,500 bicycle and pedestrian collisions occurred in Washington State. There were an average of 3,100 collisions per year and over 8,300 of those occurred within cities. Studies conducted both independently and through WSDOT have concluded that pedestrian and bicycle safety research should focus on transportation systems within towns, cities and metropolitan areas.[1] Several approaches were taken to assess the various municipalities around the state.

Collision Rate

First, a collision rate for each jurisdiction in Washington was determined based on a community's population, density and collision information. A rate of frequency was then found to determine the cut off point for each method. The Office of Financial Management provided data on community population and density and WSDOT provided collision data.

Collision rates for each city were assessed by using various methods including:

- All collisions involving pedestrians and bicyclists
- Fatal and serious injury collisions involving pedestrians and bicyclists
- All collisions involving pedestrians and bicyclists while also including a multiplier
- The Pedestrian Danger Index, a method outlined in Transportation for America's publication *Dangerous by Design*.

All Collisions

This rate was found by dividing the community's density by their total number of fatal and serious injury collisions involving pedestrians and bicyclists. Based on these calculations, the locations to study are:

1. Seattle
2. Spokane
3. Tacoma
4. Olympia
5. Everett
6. Vancouver
7. Bellingham
8. Kent
9. Bainbridge Island
10. Bellevue
11. Spokane Valley
12. Bremerton
13. Auburn
14. Yakima
15. Richland
16. Federal Way
17. Longview
18. Lacey
19. Aberdeen
20. Tumwater
21. Moses Lake
22. Redmond
23. Puyallup
24. Renton
25. SeaTac
26. Lakewood
27. Tukwila
28. Port Angeles
29. Kennewick

[1] Moudon, A.V., L. Lin, P. Hurvitz, and P. Reeves. Risk of Pedestrian Collision Occurrence: Case Control Study of Collision Locations on State Routes in King County and Seattle, Washington. In *Transportation Research Record: Journal of the Transportation Research Board, No. 2073*, Transportation Research Board of the National Academies, Washington, D.C., 2008 pp. 25-38

Fatal and Serious Injury Collisions

The Fatal and Serious Injury Rate was found by dividing the community's density by their total number of collisions involving pedestrians and bicyclists. Based on these calculations, the locations the locations to study are:

1. Seattle
2. Spokane
3. Tacoma
4. Everett
5. Auburn
6. Bainbridge Island
7. Vancouver
8. Bellingham
9. Tukwila
10. Bellevue
11. Port Angeles
12. Olympia
13. Pasco
14. Yakima
15. SeaTac
16. Redmond
17. Richland
18. Montesano
19. Spokane Valley
20. Fife
21. Chelan
22. Kent
23. Bremerton
24. Lacey
25. Puyallup
26. Mesa

All Collisions with Multiplier

This method used all collisions involving pedestrians and bicyclists and a multiplier based on the collision severity.

Severity	*Severity Code*	*n*
Fatal	4	142
Dead at Scene		
Dead on Arrival		
Died in Hospital		
Serious Injury	3	1033
Evident Injury	2	3837
Possible Injury	1	2976
No Injury	0	322

Based on these calculations, the locations the locations to study are:

1. Seattle
2. Spokane
3. Tacoma
4. Vancouver
5. Everett
6. Olympia
7. Bellingham
8. Bainbridge Island
9. Bellevue
10. Kent
11. Auburn
12. Spokane Valley
13. Bremerton
14. Yakima
15. Longview
16. Federal Way
17. Richland
18. Redmond
19. Moses Lake
20. Tumwater
21. Lacey
22. Port Angeles
23. Aberdeen
24. Tukwila
25. Puyallup
26. SeaTac

Pedestrian Danger Index

The Pedestrian Danger Index (PDI) uses the average pedestrian fatality rate per 100,000 residents and the percentage of residents who commute to work by foot. The following

data table was taken from Transportation for America's *Dangerous by Design* publication and focuses on metropolitan areas around the state. The percent of workers walking to work was based on the 2000 census. The PDI focuses on those areas with a high number of fatalities despite low walking rates.

Metro Area Pedestrian Safety Rankings: Washington

Safety Rank Within State	Metro Area	Pedestrian Danger Index	Total Pedestrian Fatalities (2007-2008)	% of Total Traffic Deaths That Were Pedestrians	Avg.Yr. Fed $ Spent Per Person	% of Workers Walking to Work	2008 Population
1	Yakima	80.7	10	15.20%	$1.12	2.60%	234,564
2	Kennewick-Pasco-Richland	51.2	4	12.10%	$1.18	1.70%	235,841
3	Bellingham	37.1	6	16.20%	$2.29	4.10%	196,529
4	Portland-Vancouver-Beaverton	36.4	47	15.60%	$1.98	2.90%	2,207,462
5	Seattle-Tacoma-Bellevue	31.1	65	16.70%	$3.28	3.10%	3,344,813
6	Mount Vernon-Anacortes	28.4	2	6.70%	$0.00	3.00%	118,000
7	Bremerton-Silverdale	22.3	4	10.30%	$0.45	3.80%	239,769
8	Wenatchee	22	2	8.70%	$4.25	4.20%	108,193
9	Longview	21.9	1	4.50%	$0.61	2.30%	101,254
10	Spokane	19.4	5	9.10%	$1.30	2.80%	462,677
11	Olympia	15	2	4.30%	$1.85	2.80%	245,181
12	Lewiston	0	0	0.00%	$3.82	3.00%	73,129

The table above acts as a cross-reference for the other methods outlined. It is limited in the fact that it focuses on pedestrian fatalities and does not include bicyclist fatality or commuting data. Future research into this area would be useful to provide a similar analysis for each city across the state.

For further information on the *Dangerous by Design* methodology and their complete findings visit: http://t4america.org/resources/dangerousbydesign/.

Risk Location Identification

The priority risk communities determined above then gave a starting point to identify pedestrian and bicycle risk locations across the state. The risk location identification was conducted through the following steps:

1. Data Analysis
2. Visual Assessment
3. Crosscheck

Data Analysis

The data analysis sorted the database of collision locations involving pedestrians and bicyclists between 2006 and 2008 received from the WSDOT TDO. A pivot table was created in Microsoft Excel to sort by city then primary traffic way. The table was then

reviewed and those roadways with five or more collisions within a specific city where highlighted. The analysis did not take collision proximity into account, merely a total of the number of collisions along the corridor. A list was then complied of each city and its roadways with five or more bicycle and pedestrian collisions.

Visual Assessment
The visual assessment built upon the list created in the data analysis. Each location was assessed by reviewing the available geocoded collision locations involving pedestrians and bicyclists to determine where risk locations may be located. The geocoded locations included those on city streets and state routes between 2006 and 2008. Not all collisions on city streets were available for review in GIS format due to data limitations, such as lack of address, inaccuracies in address and human error.

In addition to reviewing the locations found during the data analysis, other apparent corridors that could be seen using the GIS were noted and added.

Crosscheck
This above list was then vetted against various resources complied by both WSDOT and the University of Washington including:

- Pedestrian Accident Location Analysis (PALs) list for the 2007-2009 biennium
- Hotspot Analyses of Pedestrian and Bicyclist Collisions and Locations[2]
- State Highways as Main Streets: A Study of Community Design and Visioning[3]
- Funded Pedestrian & Bicycle Safety Grant Projects
- Funded Safe Routes to School Projects
- Funded Highway Safety Improvement Projects

[2] Hurvitz P., A.V. Moudon, L. Lin, L. de Montigny, P. Reeves. Hotspot Analysis of Pedestrian and Bicyclist Collisions and Locations, WSDOT and University of Washington Research Study
[3] Nicholls, J., W. Payne, C. Gear, and J. Miller. 2009. State Highways as Main Streets: A Study of Community Design and Visioning